

LA-UR-18-25418

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Title: TA-16-0303 Crystal Lab Renovation, Pre-Bid Meeting

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Intended for: Slide show presentation will be provided via email to subcontractors

potentially submitting a bid on this project.

Issued: 2018-06-20





TA-16-0303 Crystal Lab Renovation

Pre-Bid Meeting



June 19, 2018



June 19, 2018

9:00 – 10:30 Pre-Bid Presentation 10:30 – 12:00 Site Walk

> TA-16-0969 TA-16-0303



- Andre Clark Procurement Specialist
 - Exhibit A: General Conditions
 - Exhibit B: Special Conditions
 - · Exhibit C: Pricing
- Hugh MacRae Subcontract Tech Rep
- Mike Fichtel Project Manager
- Thaddeus Kostrubala Project Engineer
 - Exhibit D: Scope of Work
- Kyle Ramos Customer (End User)
- Warren Dela Cruz
- Bill O'Neill
 - Exhibit F: ES&H Requirements
- Steve Maestas
 - Exhibit G: Security Requirements
- Lou Kummer
 - Exhibit H: Quality Requirements

Welcome: (Andre Clark)

Section Tab

WELCOME!

- Complete the sign-in sheet
- Emergency Exits/Assembly Area
- I would like to say Thank You for showing up this morning

Purpose: (Andre Clark)

Section Tab

Purpose

This Pre-Proposal meeting is designed to:

- Provide an overview of the RFP and project scope
- Highlight key expectations and deliverables from the subcontractor
- Address questions and provide clarification of the project scope

Core Project Team: (Andre Clark)

Section Tab

- Core Project Team
- Contract Administrator (CA) Andre Clark
 - only individual can direct deviation from subcontract.
- Subcontract Technical Representative (STR) Hugh MacRae
 - technical aspects of the performance of the work.
- Project Manager Mike Fichtel
- Engineering Representative Thaddeus Kostrubala
- Safety SME Warren Dela Cruz
- Environmental SME Bill O'Neill
- Security SME Steve Maestas
- Quality SME Lou Kummer

Exhibit / Basis of Award : (Andre Clark)

Section Tab

There are four section of the contract.

Instructions To Offerors

Contract Articles

General Conditions

Special Conditions

Last day for questions: 6/26/2018 COB

All questions must be in writing submitted to aclark@lanl.gov & arledges@lanl.gov .

Proposals due 7/9/2018 at 2:00 P.M. please submit to aclark@lanl.gov & arledges@lanl.gov

Basis of Award:

- Low Price Technically Acceptable Selection Criteria
- Safety record
- 2. Technical Approach meets design requirements
- Demonstrates an understanding of and ability to perform SOW
- 4. Experience with similar scope/size projects
- 5. Experience of Key Personnel

History – LANL High Explosives Crystal Laboratory

The HE Crystal Lab is a unique, and the sole National resource, for the growth and sample preparation of large HE single crystal samples supporting mesoscale energetic materials research throughout LANL, other DOE, DoD, and university labs, and international collaborations including US-UK MDA. A broad range of applied work also supports Weapons missions.

Legacy

- -Cady (up to 1981), Dick (late 90's), Hooks (~2002), Ramos (~2011 to present)
- -TA-9 lab shut down ~1981 after accident
- -Serendipitously reopened under ONR grant in late 90's at TA-40-12 (retrofit firing site) to produce single crystal samples for gas gun experiments and as sole National resource

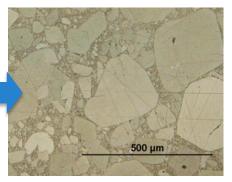
Present/future

- -ADW identified need to return TA-40-12 to firing site in July 2015
- -HE Crystal Lab to be relocated to TA-16-303 in ~2019

Reduced sensitivity formulation options and strategies

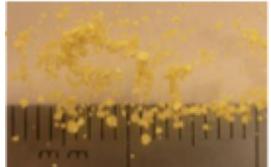


Optimized binder wetting of crystals in molding powder



Low void and defect density **PBX**

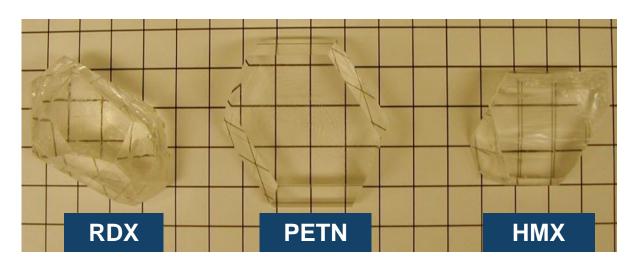
Recrystallized TATB in pristine form



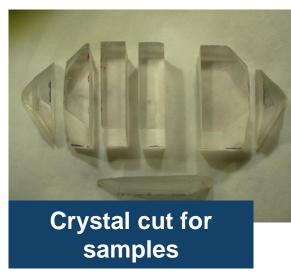
powders

Single crystal quality

Large, pristine, single crystals on cm grid







Crystalline explosives are grown from volatile solvents and are *very* susceptible to damage from thermal or pressure gradients.

Therefore, strict control of temperature and ventilation is a critical design feature for the function of the laboratory.

Climatized storage is also key.

Current HE Facility – TA-40-12



Operational Layout

- Small scale synthesis and crystal growth and optical microscopy $(72 \pm 1^{\circ} F)$
- Remote operations
- Controls for remote operations
- X-ray diffraction

*No utility room – currently collocated with operations

Operations for Consolidation

- Bench scale recrystallization and formulation (TA-9-38)
- X-ray diffraction (TA-9-21)
- Spectroscopy (TA-9-21 and TA-35-125)

Future HE Facility - TA-16-303



Exhibit D: (MacRae / Fichtel / Kostrubala) Scope of Work and Technical Specifications (Part 1)

Section Tab

Base Scope of Work (Crystal Laboratory Renovation):

- Design & renovation of building 16-0303 (currently empty shell) to the new Crystal Growing Laboratory.
- Renovation of 16-0303 includes design and installation of:
 - Architectural/structural elements including new internal lab walls, doors, aluminum store front type wall, bathroom renovations, blast doors & anchors (as specified within the RCD), epoxy coatings, interior and exterior equipment pads;
 - Services including but not limited to: electrical power, lighting, single pass through HVAC, wastewater collection, air extraction, compressed air, chilled water, deionized water, potable water, networking, and security access components. Rooms 101 and 102 require explosion proof electrical fixtures;
 - Shall include commissioning plans and activities for all applicable systems. An independent Commissioning Agent provided by the Subcontractor shall coordinate commissioning activities from design through closeout;
 - Includes installation of a limited number of GFE (refer to RCD);
 - NOTE: Building requires temperature be maintained at 72 degrees F +/- 1 as a single pass system;
 - NOTE: SUBCONTRACTOR shall develop a detailed Submittal Register and submit to CONTRACTOR within 10 work days of the 100% final design submission.

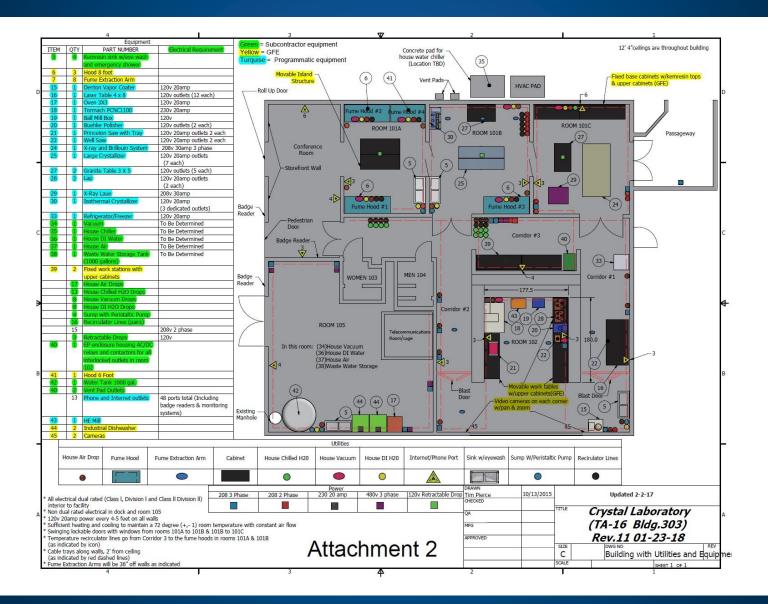
Option 1 (Earthen covered magazine):

- Installation of a new earthen covered magazine (16-1573).
 - 16-1573 is to be an earthen covered type II magazine, subject to LANL approval. Specifications for the magazine can be found within section 6.2 of the provided RCD. The magazine shall come pre-installed with HVAC, electrical, lightning protection, and fire protection;
 - Installation of 16-1573 shall include civil activities including access road, geotechnical investigation, concrete foundations, anchorage, new electrical service, lightning protection grounding;

Option 2 (Fire Alarm and Suppression):

- Design & install code compliant Fire Alarm & Suppression System:
 - Scope includes the design and installation of a remotely-monitored wet-pipe sprinkler system and supporting fire alarm system modifications within TA-16-0303;

16-0303 Conceptual Floor Plan



Future HE Facility – Modular Magazine TA-16-1573

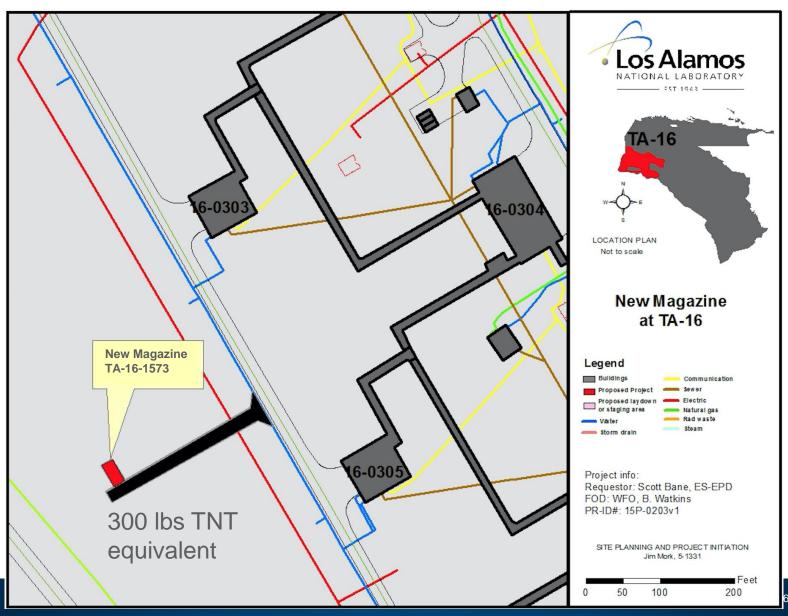


Exhibit D: (MacRae / Fichtel / Kostrubala) Scope of Work and Technical Specifications (Part 1)

Section Tab

ENGINEERING DESIGN

- SUBCONTRACTOR shall provide detailed engineering design and specification technical packages for construction.
- Design packages submitted and formal design reviews will be conducted using the Document Review Service on the SUBCONTRACTOR 30%, 60% and 90% submittals. SUBCONTRACTOR shall resolve LANL comments.
- Mandatory site walk downs shall be performed with plans in hand after the 30% and 60% submittals.
- Final designs shall be reviewed and approved by the LANL Building Official.
 - · All documents stamped, signed and Derivative Classifier-reviewed
- A detailed list of submittals that are provided by the SUBCONTRACTOR at the 30%, 60%, and 90% are identified in the Exhibit D, Table 5.1. Please review this table for
- The 90% submittal shall be the Design Agency's complete, QA-checked, and final-quality documents -- i.e., either already PE-sealed or ready for PE seal (when required by Section Z10) and the designer willing to stand behind them.
- The 100% submittal is the 90% submittal documents with all compliance comments resolved, all others dispositioned as necessary, and documents approved and issued for LANL acceptance by the design agency.
- Submittals that are not mature to the point of which required will be rejected and required modification prior to resubmittal.
- Disposition of review comments by Design/Build Subcontractor.
- A LANL CRYPTO Card will be required for access to the Document Review System (DRS). It is recommended
 that each of the Subcontractor's engineering disciplines and lower tier have at least one crypto card holder. The
 LANL Project Engineer will assist you with this process.

Exhibit D: (MacRae / Fichtel / Kostrubala) Scope of Work and Technical Specifications (Part 1)

Section Tab

ENGINEERING DESIGN SUBMITTALS (Exhibit D Table 5.1)

- Drawings, specifications and calculations per discipline (i.e. civil, structural, electrical, etc.)
- Life safety code analysis
- Statement of special inspections
- Test and Inspection Requirements and Plans
- Design Criteria and Basis Document
- Project Equipment List
- Master Document List
- Pressure safety implementation plan
- Commissioning Plan, Specs, Procedures and Schedule
- Occupancy classification
- Engineer of record
- ***Other submittals may be required based on code analysis.

ENGINEERING DESIGN SCHEDULE:

- 30% due 3 weeks after Limited Notice To Proceed (LNTP)
- 60% due 10 weeks after LNTP
- 90% due 17 weeks after LNTP
- There will be weekly status meeting during design/construction throughout the project.

Exhibit D (Scope of Work)

Exhibit D – Appendix D-1 – Subcontract Field Conditions

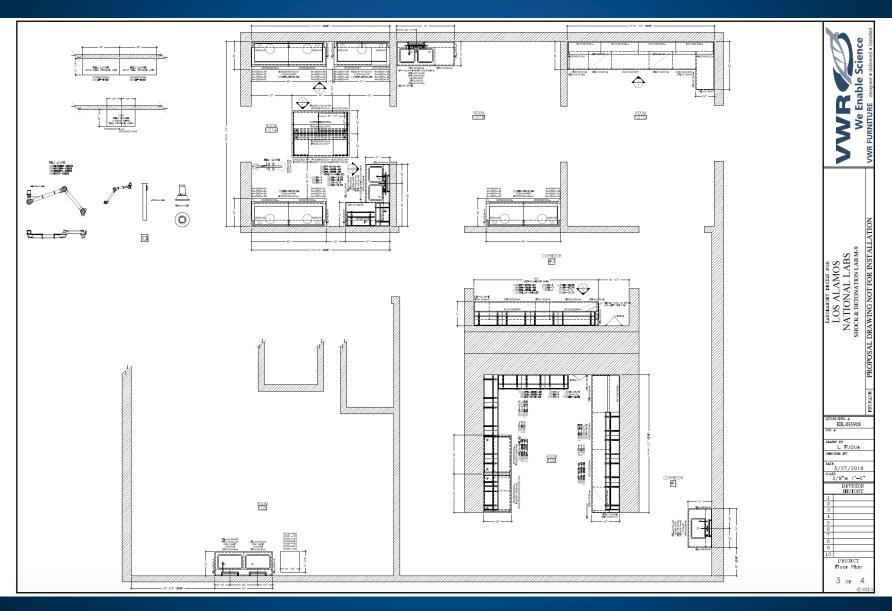
- Normal working hours 7:00 am to 4:30 pm;
- Building is cold and dark. Subcontractor to make provisions for temporary power;
- Construction water available at hydrant valve located at TA-15 (10 minutes from site);
- All dirt spoils to be wasted on site;
- CONTRACTOR RCT support will be provided during soils excavation;
- SUBCONTRACTOR is responsible for removal of construction waste in accordance with CONTRACTOR provided Waste Characterization Form (Exhibit D Attachment D-5);
- · All trucks, one-ton or greater, will require a vehicle inspection at Post 10 truck inspection station;
- Subcontractor staging area layout reference map Appendix D-7;
- Subcontractor is responsible for providing L or Q cleared escorts ratio per Activity Security
 Plan is 1 escort per 15 workers once onsite;
- A Storm Water Pollution Prevention Plan is not required so long as SUBCONTRACTOR does not exceed 1 acre of disturbed soil area. SUBCONTRACTOR will need to implement storm water management controls;

Critical Design Features for Future HE Facilities

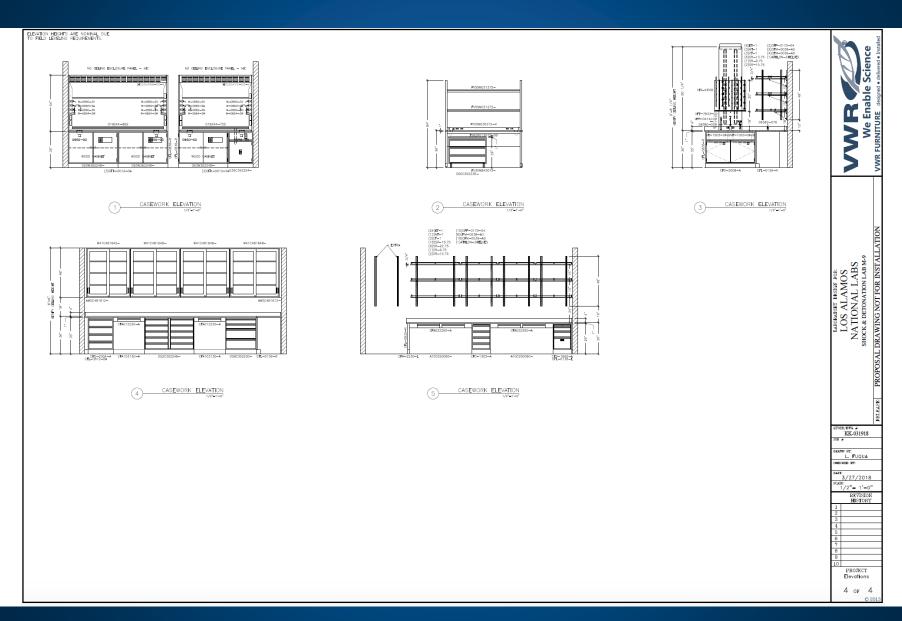
Significant planning/research has gone into the critical design features since July 2015.

- Lab furnishings and equipment
- HVAC for 72 ± 1° F with fume hoods and extraction arms in TA-16-303
- HVAC for 72° F for storage in new magazine
- **Blast doors**
 - Analysis and manufacture
- 5. "Explosion proof" utilities
 - Intrinsically safe diode lighting (e.g. Dialight)
 - EP outlets: Need solid product (e.g. Crouse-Hinds, other?), Note high density of outlets

Lab Furnishings and Equipment



Lab Furnishings and Equipment



Blast doors: Analysis and Manufacture

- Analysis already performed by Global Nuclear Network Analysis, LLC, including suggestions for installation
- Doors with blast louvers sourced from Krieger Specialty Products

INTERNAL BLAST LOADING ASSESSMENT OF TA-16-303, ROOM 102 E. A Rodriguez, P.E. August 2017

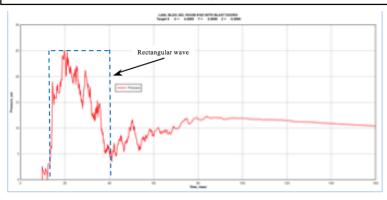


Figure 46 -Pressure history for Corridor #2 double-leaf doors.

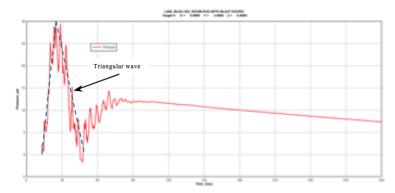
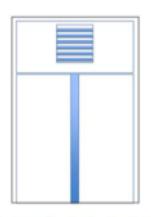


Figure 47 -Pressure history for Corridor #1 double-leaf doors.



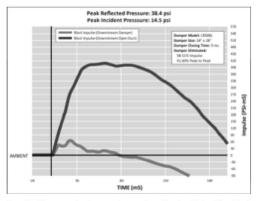


Figure 51 - Blast suppression damper performance data on impulse with Open/Closed ducting

Figure 48 - Double-leaf door with blast damper above doorway.

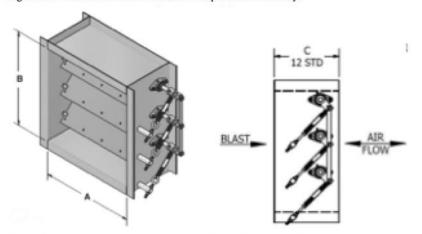


Figure 49 - Blast suppression damper; RUSKIN (Reference 14).

"Explosion proof" utilities: volatile solvents and nonconsolidated explosives

Dialight LED Lighting Fixture Catalog

for Industrial and Hazardous Locations

SafeSite® LED Linear - Class I Div. 1 for Hazardous applications



Legacy Explosion rated receptacles – are there better, modern options?



*Note – high density of outlets in current design.

Exhibit F: (Dela Cruz / O'Neill)

Section Tab

Safety/Environmental Exhibit F Requirements

- Warren Dela Cruz, DSESH-CPCS
- William O' Neill, DSESH-CPCS

Safety/Environmental Performance & Exhibit F Requirements

Section Tab

- Firms must submit a <u>properly executed Environment, Safety, and Health History Worksheet</u> (Attachment F3-2) along with <u>a letter from their Workman's Compensation Insurance Carrier</u> to certify the Experience Modification Rate (EMR) performance;
- If a firm intends to use lower-tier subcontractors to perform elements of the subcontracted Scope of Work, such lower-tier subcontractors shall also meet the maximum allowable averages specified above;
- Attachment F3-2: ENVIRONMENT, SAFETY AND HEALTH WORKSHEET
 - Attach copies of the OSHA Annual Summary Logs (OSHA's Form 300A) for the three most recent years and a current year OSHA 300 Log for the months during the period since the last annual report.

Safety/Environmental Performance & Exhibit F Requirements

Section Tab

- 1. Experience Modification Rate (EMR)
- 2. Total Recordable Case (TRC) and Days Away/Restricted/Transferred Case (DART) Rates
- 3. Fatalities
 - Any fatalities within the last three (3) years? Yes_____ No_____
- 4. Bureau of Alcohol, Tobacco, and Firearms violations
 - Any Bureau of Alcohol, Tobacco, and Firearms violations within the last three (3) years?
- 5. For companies exempt from record keeping requirements per 29 CFR 1904.1 (ten or fewer employees), complete items 1 and 3 above and summarize the cause of the injuries/illnesses for the past three (3) years, including the current year, on a separate attachment to this form.
 - Ex. F 3.0: F3-2 Forms required
 - Ex. F 4.0: ES&H Specialist Option B

Environmental Compliance General Requirements

Section Tab

F.38: Pollution Prevention: Manage work that insures reduction of pollution generation.

- Practice pollution prevention and waste minimization techniques including proper storage of chemicals to assure compatibility in storage, prevent spills, separation of waste streams to expedite material management
- Track recyclable materials

F.40.0: Work within a PRS

- Soils, asphalts and concretes will need characterization prior to removal from site.
- No mechanical potholing within a PRS, no wash out pits or storm water retention ponds.
- Soil disturbance within a PRS must be stabilized prior to de-mobilization

F.42 Spill Prevention, Reporting and Response:

- · Report all spills, no matter the quantity, to STR.
 - Assist with clean up and proper WM disposal

Water Quality: NPDES Storm Water IP

Section Tab

Your project is responsible for Best Management Practices (BMPs) installations to control
erosion of soil and sediment from the site. Please ensure that your project uses appropriate
BMPs to protect watercourses and drainages from the project work to maintain compliance with
the IP; your field activity should not result in increased sediment/contaminant loading at the
downstream SMA samplers.

Exhibit G: (Steve Maestas)

Section Tab

• EXHIBIT G

- Prohibited Items
 - · Weapons/Firearms
 - Alcohol/Illegal Drugs (including medical marijuana)
 - Knives
- Controlled Articles
 - · Cell Phones/Computers
 - · Recording Devices
 - Smart Watches
 - Cameras
 - Wireless
 - Flash Drives
- Escorting
 - Badges
 - Escort Ratios
 - US Citizens

Activity Security Plan

- Modified Escort Ratios
 - 15 to 1 at the jobsite
- Concrete Truck Inspections at VAP 6
- Debris Removal

Exhibit H: (Lou Kummer)

Section Tab

- Details in Exhibit H are to be carefully reviewed and followed
 - Project is Management Level 4 (ML-4).
- General Contractor (GC) must develop and submit a Quality Assurance (QA) Plan which essentially adopts the pertinent clauses of Exhibit H;
- GC's A/E Design Firm must submit their QA Plan which addresses how the design process will be managed;
- Quality requirements from LANL master specifications and engineering standards are to be carefully reviewed and followed

Questions?

Section Tab

Content

- Sub